CLAIMS

1. A heat-resistant Ni-alloy composite having excellent high-temperature oxidation resistance, comprising a Ni-alloy substrate that has been subjected to an Al-diffusing treatment, wherein said heat resistant Ni-alloy composite having a multi-layer surface structure comprising an inner layer composed of an α-Cr phase and an outer layer composed of a β phase (Ni-Al-Cr) and a γ' phase (Ni_3Al(Cr)) on the substrate surface, wherein the Al content in the outer layer is at least 20 atomic percent.

2. The heat-resistant Ni-alloy composite according to claim 1, wherein the Ni-alloy substrate has a Cr-containing layer.

3. The heat-resistant Ni-alloy composite according to claim 2, wherein the Cr-containing layer comprises a Ni-Cr-based alloy having a Cr content of at least 20 atomic percent.

4. The heat-resistant Ni-alloy composite according to claim 2 or 3, wherein a Ni layer or a Ni-Al layer is formed on the Cr-containing layer.

5. The heat-resistant Ni-alloy composite according to claim 1, wherein the Ni-alloy substrate comprises a heat-resistant Ni-based alloy or a Ni-based superalloy.

6. The heat-resistant Ni-alloy composite according to claim 1, wherein the Ni-alloy substrate comprises a Ni-Cr-based alloy having a Cr content of at least 20 atomic percent.